



sequence listing.ST25.txt  
SEQUENCE LISTING

<110> Cano, Carlos Antonio Durante  
Nieto, Enrique Gerardo Guillen  
Acosta, Anabel Alvarez  
Munoz, Luis Emilio Carpio  
Vazquez, Diogenes Quintana  
Rodriguez, Carmen Elena Gomez  
Rodriguez, Recardo de la Caridad Siva  
Galvez, Consuelo Nazabal  
Angulo, Maria de Jesus Leal  
Dunn, Alejandro Miguel Martin

<120> Expression System of Heterologous Antigens as Fusion Proteins

<130> LEXSA P-13DIV2

<140> 09/612,925

<141> 2000-07-10

<150> US 08/930,917

<151> 1997-09-16

<150> PCT/CU97/00001

<151> 1997-01-17

<160> 30

2  
<170> PatentIn version 3.2

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<210> 1

<211> 1797

<212> DNA

<213> Neisseria meningitidis (group B)

<400> 1

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ctgattactt tggaaaccga taaagcgact atggacgtac ctgctgaagt tgcaggccta 180

gtcaaagaag ttAAAGTTAA agtcggcgac aaaatctctg aagggtggttt gattgtcgctc 240

gttgaagctg aaggcacggc agccgctcct aaagccgaag cggctgccgc cccggcgcaa 300

gaagcccccta aagctgccgc tcctgctccg caagccgcgc aattcggcgg ttctgcccgt 360

gccgagtacg acgtggtcgt attgggtggc ggtcccggcg gttactccgc tgcatttgcc 420

cctgcccgtg aaggcttgaa agtcgcccattc gtcgaacgtt acaaaaacttt gggcggcggtt 480

tgcctgaacg tcggctgtat cccttccaa gccttggcgc acaatgccgc cgttatcgac 540

gaagtgcgcc acttggctgc caacggtatac aaataccccg agccggaact cgacatcgat 600

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gcgaaaagcc gtaaaagtggc cgttatccaa ggcgacgggc aattcttaga tccgcaccac 720

ttggaaagtgt cgctgactgc cggcgtacgc tacgaacagg cagccccac cggcgagaaa 780

aaaatcggtt cttcaaaaaa ctgtatcatt gcagcaggca gccgcgtaac caaaactgcct 840

sequence listing.ST25.txt

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ccgggcaaac tgctgattat cggcggcggc attatcagcc tcgagatggg tacggttac	960
agcacgctgg gttcgcgtt gnatgtggtt gaaatgtatgg acggcctgat gcaaggcgca	1020
gaccgcgatt tggtaaaagt atggcaaaaa caaaacgaat accgtttga caacattatg	1080
gtcaacacca aaaccgttc agttgagccg aaagaagacg gcgttacgt tacctttgaa	1140
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atcgtcggtc agccgatgtt ggcgcacaaa gccgttacg aaggccacgt tgccgcca	1380
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gtcggtccga acggtggcga tatgatcggc gaagtctgcc ttgccatcga aatgggctgc	1680
gacgcggcag acatcggcaa aaccatccac ccgcacccga cttggcgtatccatcggt	1740
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<210> 2

<211> 47

<212> PRT

<213> Neisseria meningitidis (group B)

<400> 2

Met Val Asp Lys Arg Met Ala Leu Val Glu Leu Lys Val Pro Asp Ile			
1	5	10	15

Gly Gly His Glu Asn Val Asp Ile Ile Ala Val Glu Val Asn Val Gly			
20	25	30	

Asp Thr Ile Ala Val Asp Asp Thr Leu Ile Thr Leu Asp Leu Glu			
35	40	45	

<210> 3

<211> 146

<212> DNA

<213> Neisseria meningitidis (group B)

<400> 3

ttccatggta gataaaagaa tggcttagt tgaattgaaa gtgcccgaca ttggcggaca	60
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taccctgatt actttggatc tagaaa sequence listing.ST25.txt

146

<210> 4  
<211> 18  
<212> PRT  
<213> Neisseria meningitidis (group B)

<400> 4

Val Asn Val Gly Asp Thr Ile Ala Val Asp Asp Thr Leu Ile Thr Leu  
1 5 10 15

Asp Leu

<210> 5  
<211> 18  
<212> PRT  
<213> Neisseria meningitidis (group B)

<400> 5

Val Glu Val Gly Ser Lys Ile Tyr Val Asp Asp Gly Leu Ile Ser Leu  
1 5 10 15

Gln Val

<210> 6  
<211> 32  
<212> PRT  
<213> Neisseria meningitidis (group B)

<400> 6

Leu Val Glu Leu Lys Val Pro Asp Ile Gly Gly His Glu Asn Val Asp  
1 5 10 15

Ile Ile Ala Val Glu Val Asn Val Gly Asp Thr Ile Ala Val Asp Asp  
20 25 30

<210> 7  
<211> 32  
<212> PRT  
<213> Neisseria meningitidis (group B)

<400> 7

Leu Arg Glu Val Gln Val Pro Asp Arg Lys Leu His Lys Gly Val Gln  
1 5 10 15

Leu Leu Ala Gly Glu Leu Gly Ile Gly Glu Ala Leu Gln Val Asp Asp  
20 25 30

sequence listing.ST25.txt

<210> 8

<211> 162

<212> PRT

<213> Neisseria meningitidis (group B)

<400> 8

Met Val Asp Lys Arg Met Ala Leu Val Glu Leu Lys Val Pro Asp Ile  
1 5 10 15

Gly Gly His Glu Asn Val Asp Ile Ile Ala Val Glu Val Asn Val Gly  
20 25 30

Asp Thr Ile Ala Val Asp Asp Thr Leu Ile Thr Leu Asp Leu Asp Ser  
35 40 45

Arg Gly Ile Arg Ile Gly Pro Gly Arg Ala Ile Leu Ala Thr Ala Gly  
50 55 60

Gly Gly Ala Arg Gln Ser Thr Pro Ile Gly Leu Gly Gly Ala Leu Tyr  
65 70 75 80

Thr Thr Ala Gly Gly Ala Arg Lys Ser Ile Thr Lys Gly Pro Gly  
85 90 95

Arg Val Ile Tyr Ala Thr Ala Gly Gly Gly Ala Arg Lys Arg Ile His  
100 105 110

Ile Gly Pro Gly Arg Ala Phe Tyr Thr Thr Ala Gly Gly Gly Ala Arg  
115 120 125

Lys Arg Ile Thr Met Gly Pro Gly Arg Val Tyr Tyr Thr Thr Ala Gly  
130 135 140

Gly Gly Ala Ser Ile Arg Ile Gln Arg Gly Pro Gly Arg Ala Phe Val  
145 150 155 160

Thr Ile

<210> 9

<211> 489

<212> DNA

<213> Neisseria meningitidis (group B)

<400> 9

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aatgtagata ttatcgccgt tgaagtaaac gtgggcgaca ctattgctgt ggacgataacc 120

ctgattactt tggatctaga ctcgagaggc attcgatcg gcccaggctcg cgcaattta 180

sequence listing.ST25.txt

gcaacagctg	240
gcggtggcgc	
acgtcaatct	
accctattg	
gtttaggtca	
ggctctgtat	
acgactgccc	300
gcggtggtgc	
gcgaaaagt	
atcaccaagg	
gtccaggccg	
cgtcatttac	
gccaccgcgg	360
gcggcggtgc	
ccgtaagcgt	
atccacattg	
gcccaggccg	
tgcattctat	
actacagcag	420
gtggtggcgc	
acgtaaacgc	
atcaactatgg	
gtcctggtcg	
cgtctattac	
acgaccgctg	480
gcggcggtgc	
tagcattcgc	
atccaacgcg	
gccctggtcg	
tgcatttg	
accatatga	489

<210> 10

<211> 47

<212> PRT

<213> Neisseria meningitidis (group B)

<400> 10

Met	Leu	Asp	Lys	Arg	Met	Ala	Leu	Val	Glu	Leu	Lys	Val	Pro	Asp	Ile
1					5			10					15		

Gly	Gly	His	Glu	Asn	Val	Asp	Ile	Ile	Ala	Val	Glu	Val	Asn	Val	Gly
			20					25					30		

Asp	Thr	Ile	Ala	Val	Asp	Asp	Thr	Leu	Ile	Thr	Leu	Glu	Thr	Asp
35					40							45		

<210> 11

<211> 27

<212> DNA

<213> Artificial

<220>

<223> Primer 5' No. 1573

<400> 11

ttccatggta gatamagmtg gctttag

27

<210> 12

<211> 29

<212> DNA

<213> Artificial

<220>

<223> Primer 3' No. 1575

<400> 12

tttctagatc caaagtaatc agggtatcg

29

<210> 13

<211> 26

<212> DNA

<213> Artificial

<220>

<223> Primer 3' No. 2192

sequence listing.ST25.txt

<400> 13  
ggcggttctg ccgattaagg atccga 26

<210> 14  
<211> 146  
<212> DNA  
<213> Artificial

<220>  
<223> Derived fragment from the first 47 amino acids of the P64k antigen of *N. meningitidis*. The restriction sites Ncol (positions 3 to 8) and XbaI (positions 139 to 144) are introduced by PCR, which provokes changes in the nucleotide sequence of this

<400> 14  
ttccatggta gataaaagaa tggcttagt tgaattgaaa gtgcccgaca ttggcggaca 60  
cgaaaatgta gatattatcg cggttgaagt aaacgtgggc gacactattg ctgtggacga 120  
taccctgatt actttggatc tagaaa 146

<210> 15  
<211> 47  
<212> PRT  
<213> Artificial

<220>  
<223> Stabilizer fragment derived from the first 47 amino acids of the P64k antigen of *N. meningitidis*

<400> 15

Met Val Asp Lys Arg Met Ala Leu Val Glu Leu Lys Val Pro Asp Ile  
1 5 10 15

Gly Gly His Glu Asn Val Asp Ile Ile Ala Val Glu Val Asn Val Gly  
20 25 30

Asp Thr Ile Ala Val Asp Asp Thr Leu Ile Thr Leu Asp Leu Glu  
35 40 45

<210> 16  
<211> 16  
<212> DNA  
<213> Artificial

<220>  
<223> Oligonucleotide used to introduce restriction sites XbaI, EcoV, and BamHI in the 3' end of the stabilizer fragment of SEQ. ID. NO. 13

<400> 16  
ctagatttga tatcag 16

<210> 17

sequence listing.ST25.txt

<211> 16  
<212> DNA  
<213> Artificial

<220>  
<223> Oligonucleotide used to introduce restriction sites XbaI, EcoV,  
and BamHI in the 3' end of the stabilizer fragment of SEQ. ID.  
NO. 13

<400> 17  
gatcctgata tcaaatt

16

<210> 18  
<211> 15  
<212> PRT

<213> Human immunodeficiency virus type 1

<400> 18

Ser Arg Gly Ile Arg Ile Gly Pro Gly Arg Ala Ile Leu Ala Thr  
1 5 10 15

<210> 19  
<211> 15  
<212> PRT

<213> Human immunodeficiency virus type 1

<400> 19

Arg Gln Ser Thr Pro Ile Gly Leu Gly Gln Ala Leu Tyr Thr Thr  
1 5 10 15

<210> 20  
<211> 15  
<212> PRT

<213> Human immunodeficiency virus type 1

<400> 20

Arg Lys Ser Ile Thr Lys Gly Pro Gly Arg Val Ile Tyr Ala Thr  
1 5 10 15

<210> 21  
<211> 15  
<212> PRT

<213> Human immunodeficiency virus type 1

<400> 21

Arg Lys Arg Ile His Ile Gly Pro Gly Arg Ala Phe Tyr Thr Thr  
1 5 10 15

<210> 22  
<211> 15  
<212> PRT

<213> Human immunodeficiency virus type 1

<400> 22

sequence listing.ST25.txt

Arg Lys Arg Ile Thr Met Gly Pro Gly Arg Val Tyr Tyr Thr Thr  
1 5 10 15

<210> 23  
<211> 15  
<212> PRT  
<213> Neisseria meningitidis (group B)

<400> 23

Ser Ile Arg Ile Gln Arg Gly Pro Gly Arg Ala Phe Val Thr Ile  
1 5 10 15

<210> 24  
<211> 15  
<212> PRT  
<213> Human immunodeficiency virus type 1

<400> 24

Thr Ser Ile Thr Ile Gly Pro Gly Gln Val Phe Tyr Arg Thr Gly  
1 5 10 15

<210> 25  
<211> 15  
<212> PRT  
<213> Human immunodeficiency virus type 1

<400> 25

Arg Gln Arg Thr Ser Ile Gly Gln Gly Gln Ala Leu Tyr Thr Thr  
1 5 10 15

<210> 26  
<211> 5  
<212> PRT  
<213> Artificial  
  
<220>  
<223> Spacer peptide that divides the various V3 epitopes in the MEPS  
TAB3, TAB4, TAB9, and TAB13  
  
<400> 26

Ala Gly Gly Gly Ala  
1 5

<210> 27  
<211> 141  
<212> PRT  
<213> Artificial  
  
<220>  
<223> Multiepitopic polypeptides that includes several copies of the  
central part of the variable region 3 of the gp120 protein of the  
HIV-1

sequence listing.ST25.txt

<400> 27

Met Ala Pro Thr Ser Ser Ser Thr Ala Gln Thr Gln Leu Gln Leu Glu  
1 5 10 15

His Leu Leu Leu Asp Leu Gln Ile Phe Leu Ser Arg Gly Ile Arg Ile  
20 25 30

Gly Pro Gly Arg Ala Ile Leu Ala Thr Ala Gly Gly Gly Ala Arg Gln  
35 40 45

Ser Thr Pro Ile Gly Leu Gly Gly Ala Leu Tyr Thr Thr Ala Gly Gly  
50 55 60

Gly Ala Arg Lys Ser Ile Thr Lys Gly Pro Gly Arg Val Ile Tyr Ala  
65 70 75 80

Thr Ala Gly Gly Gly Ala Arg Lys Arg Ile His Ile Gly Pro Gly Arg  
85 90 95

Ala Phe Tyr Thr Thr Ala Gly Gly Ala Arg Lys Arg Ile Thr Met  
100 105 110

Gly Pro Gly Arg Val Tyr Tyr Thr Thr Ala Gly Gly Gly Ala Ser Ile  
115 120 125

Arg Ile Gln Arg Gly Pro Gly Arg Ala Phe Val Thr Ile  
130 135 140

<210> 28

<211> 162

<212> PRT

<213> Artificial

<220>

<223> Multiepitopic polypeptides that includes several copies of the central part of the variable region 3 of the gp120 protein of the HIV-1

<400> 28

Met Val Asp Lys Arg Met Ala Leu Val Glu Leu Lys Val Pro Asp Ile  
1 5 10 15

Gly Gly His Glu Asn Val Asp Ile Ile Ala Val Glu Val Asn Val Gly  
20 25 30

Asp Thr Ile Ala Val Asp Asp Thr Leu Ile Thr Leu Asp Leu Asp Ser  
35 40 45

Arg Gly Ile Arg Ile Gly Pro Gly Arg Ala Ile Leu Ala Thr Ala Gly  
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sequence listing.ST25.txt

50

55

60

Gly Gly Ala Arg Gln Ser Thr Pro Ile Gly Leu Gly Gly Ala Leu Tyr  
65 70 75 80

Thr Thr Ala Gly Gly Gly Ala Arg Lys Ser Ile Thr Lys Gly Pro Gly  
85 90 95

Arg Val Ile Tyr Ala Thr Ala Gly Gly Gly Ala Arg Lys Arg Ile His  
100 105 110

Ile Gly Pro Gly Arg Ala Phe Tyr Thr Thr Ala Gly Gly Gly Ala Arg  
115 120 125

Lys Arg Ile Thr Met Gly Pro Gly Arg Val Tyr Tyr Thr Thr Ala Gly  
130 135 140

Gly Gly Ala Ser Ile Arg Ile Gln Arg Gly Pro Gly Arg Ala Phe Val  
145 150 155 160

Thr Ile

<210> 29  
<211> 202

<212> PRT

<213> Artificial

<220>

<223> Multiepitopic polypeptides that include several copies of the central part of the variable region 3 of the gp120 protein of the HIV-1

<400> 29

Met Val Asp Lys Arg Met Ala Leu Val Glu Leu Lys Val Pro Asp Ile  
1 5 10 15

Gly Gly His Glu Asn Val Asp Ile Ile Ala Val Glu Val Asn Val Gly  
20 25 30

Asp Thr Ile Ala Val Asp Asp Thr Leu Ile Thr Leu Asp Leu Asp Ser  
35 40 45

Arg Gly Ile Arg Ile Gly Pro Gly Arg Ala Ile Leu Ala Thr Ala Gly  
50 55 60

Gly Gly Ala Arg Gln Ser Thr Pro Ile Gly Leu Gly Gln Ala Leu Tyr  
65 70 75 80

sequence listing.ST25.txt  
Thr Thr Ala Gly Gly Ala Arg Lys Ser Ile Thr Lys Gly Pro Gly  
85 90 95

Arg Val Ile Tyr Ala Thr Ala Gly Gly Gly Ala Arg Lys Arg Ile His  
100 105 110

Ile Gly Pro Gly Arg Ala Phe Tyr Thr Thr Ala Gly Gly Gly Ala Arg  
115 120 125

Lys Arg Ile Thr Met Gly Pro Gly Arg Val Tyr Tyr Thr Thr Ala Gly  
130 135 140

Gly Gly Ala Arg Gln Arg Thr Ser Ile Gly Gln Gly Gln Ala Leu Tyr  
145 150 155 160

Thr Thr Ala Gly Gly Ala Thr Ser Ile Thr Ile Gly Pro Gly Gln  
165 170 175

Val Phe Tyr Arg Thr Gly Ala Gly Gly Gly Ala Ser Ile Arg Ile Gln  
180 185 190

Arg Gly Pro Gly Arg Ala Phe Val Thr Ile  
195 200

<210> 30  
<211> 368  
<212> DNA  
<213> Artificial

<220>  
<223> Synthetic fragment that codifies for MEP TAB9. Restriction sites XbaI and BamHI are introduced.

<400> 30  
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tggtgcgcgc aaaagtatca ccaagggtcc aggccgcgtc atttacgcca ccgcgggcgg 180  
cggtgcccgta aagcgtatcc acattggccc aggccgtgca ttctatacta cagcaggtgg 240  
tggcgcacgt aaacgcatacata ctaggggtcc tggtcgcgtc tattacacga ccgctggcgg 300  
cggtgctagc attcgcatcc aacgcggccc tggtcgtgca tttgtgacca tatgataacg 360  
cgggatcc 368